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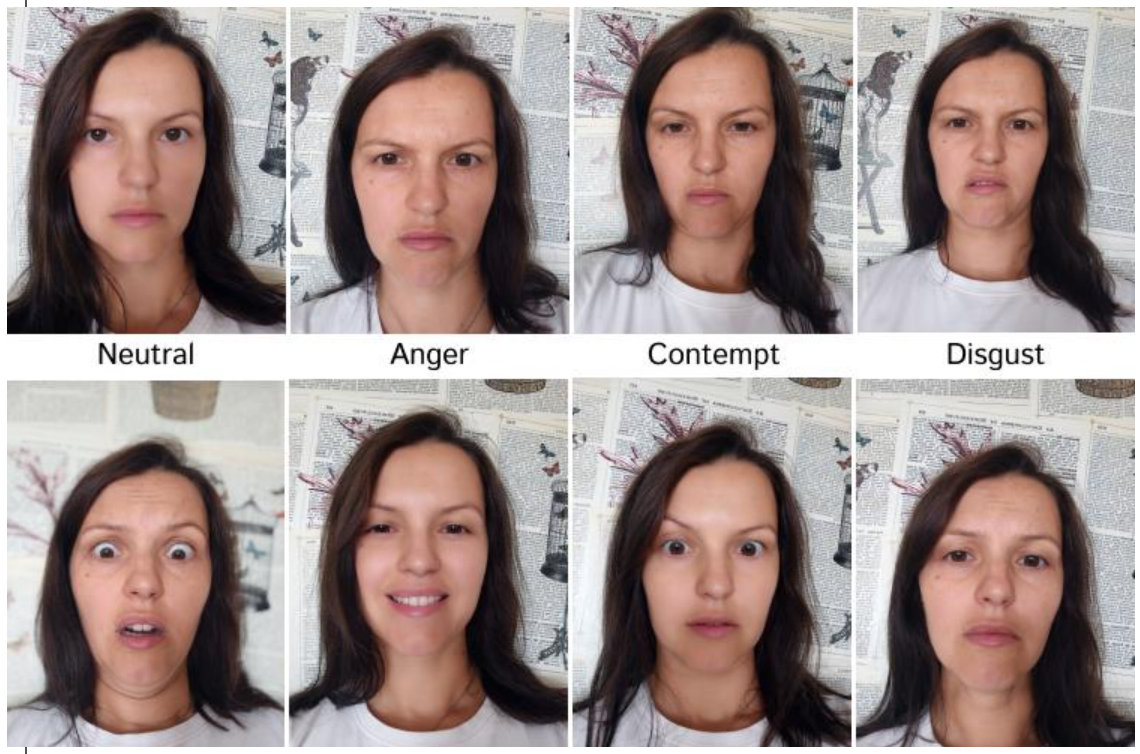
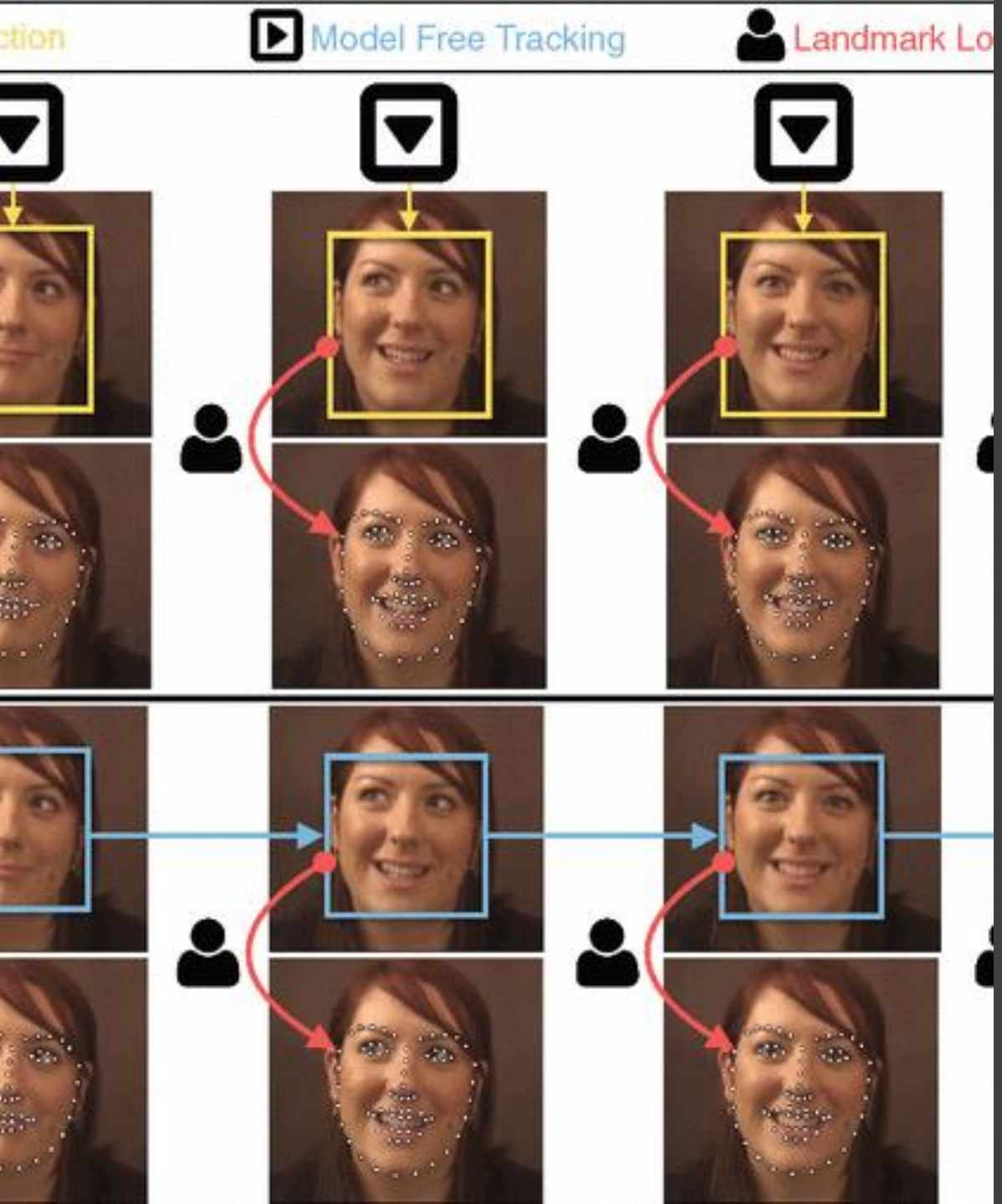
EMOTION DETECTION PROJECT



- **Introduction**
  - Detects emotions (Happy, Sad, Angry, Neutral, etc.) from images/camera.
  - **Importance**: Education, Customer Service, Security, Psychology



DATASET

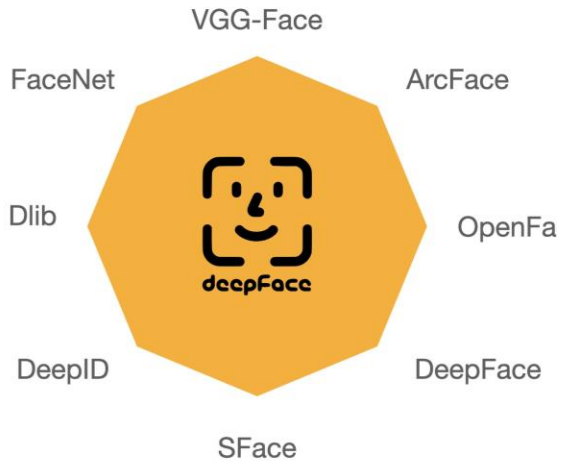
FER2013 Dataset (Facial Expression Recognition).

Source: Kaggle.

Thousands of facial expression images

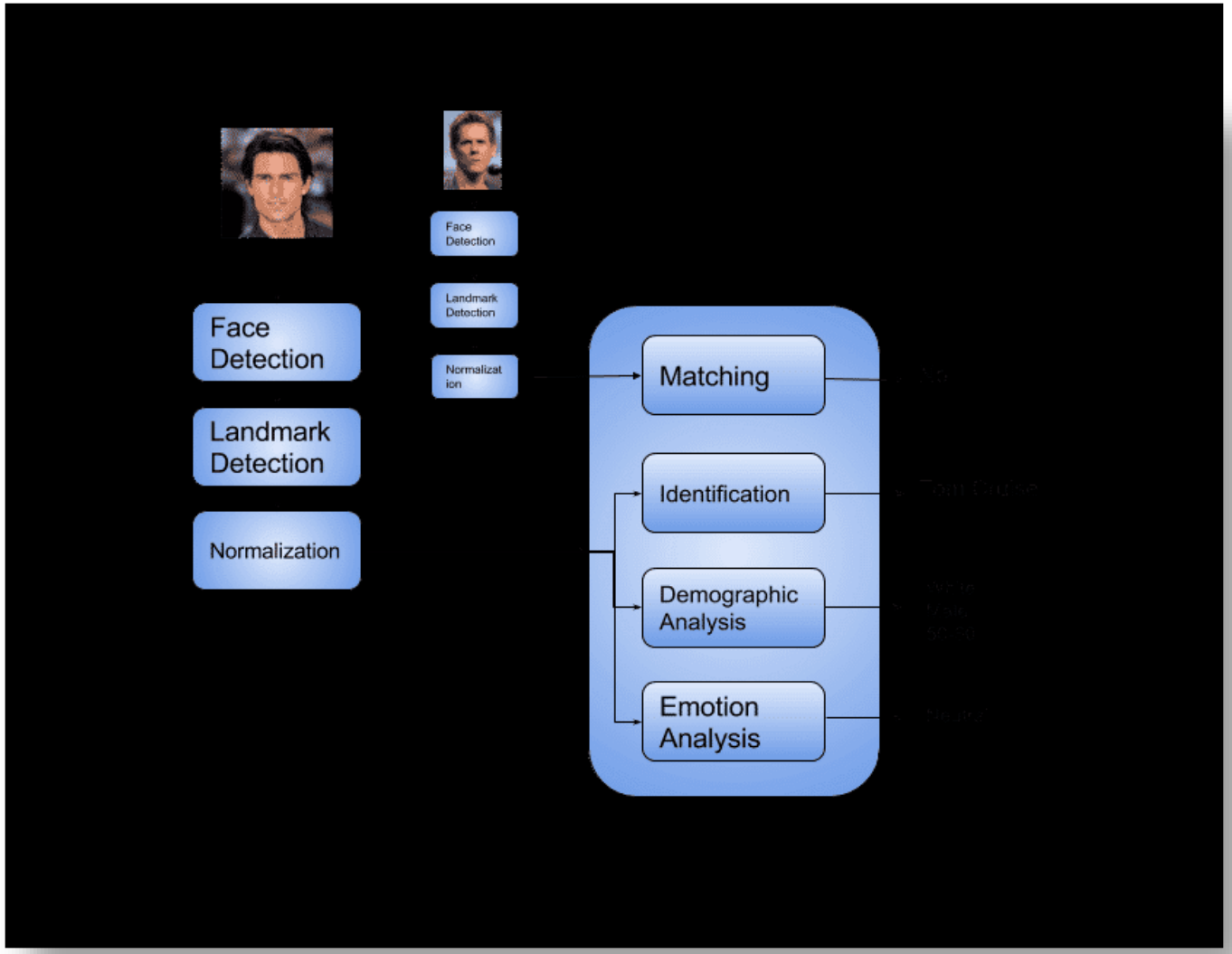
TOOLS & LIBRARIES

PYTHON TENSORFLOW / KERAS OPENCV DEEPFACE NUMPY



Workflow

- Data Preparation (FER2013).
- Face Detection (OpenCV).
- Emotion Analysis (DeepFace/CNN).
- Prediction (Dominant Emotion).
- Output on screen/terminal



TERMINAL COMMANDS

- # Run live camera detection
- python main.py

- # Analyze stored images
- python analyze_image.py

- # Stop Python process if frozen
- taskkill /IM python.exe /F

CODE – IMAGE ANALYSIS

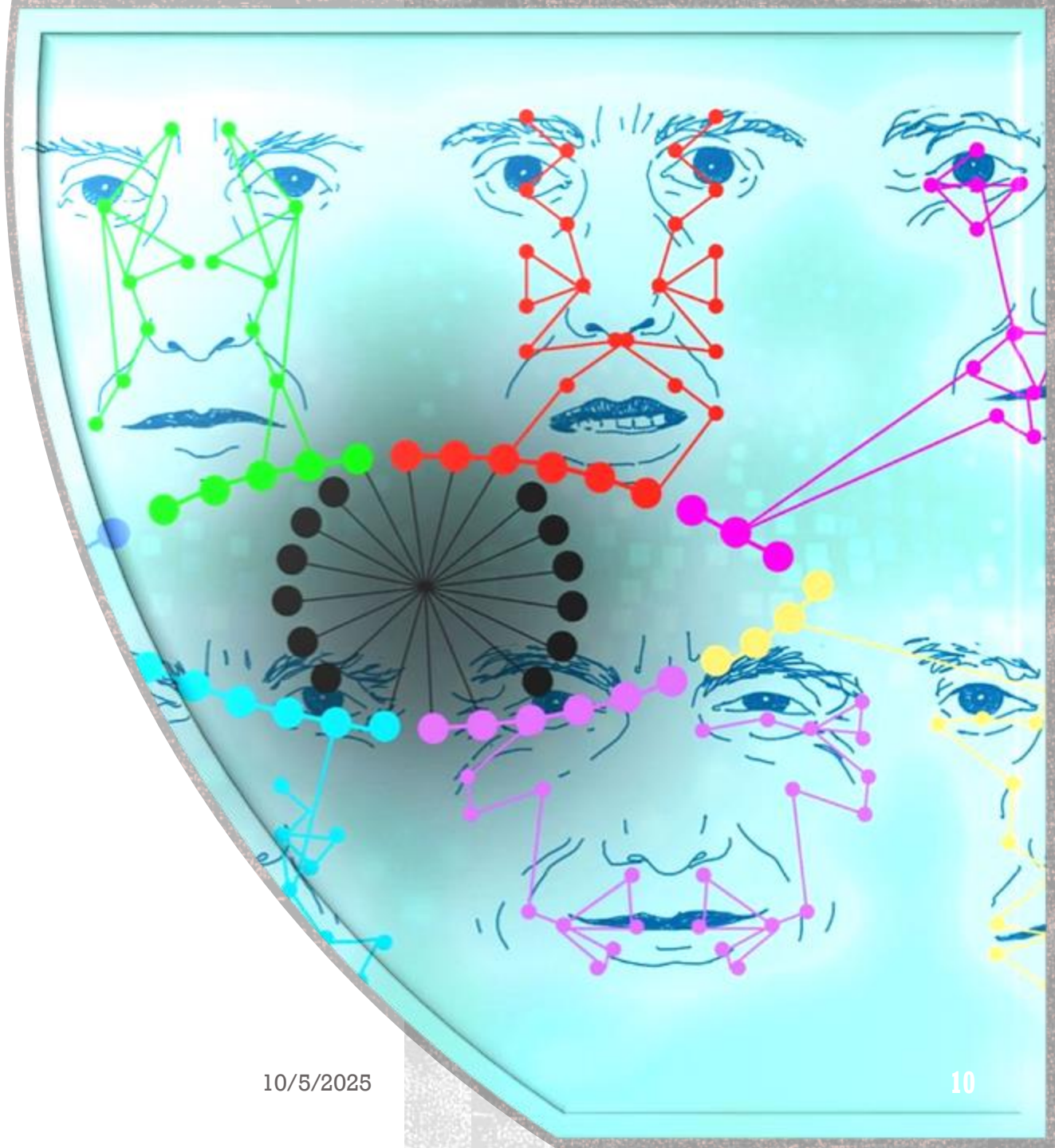
```
from deepface import DeepFace

images = ["happy.png", "sad.png", "angry.png"]

for img in images:

result = DeepFace.analyze(img, actions=['emotion'],
enforce_detection=False)

print(f"{img} → {result[0]['dominant_emotion']}")
```

CODE CAMERA LIVE DETECTION

```
import cv2
from deepface import DeepFace
cap = cv2.VideoCapture(0)
while True:
ret, frame = cap.read()
cv2.imshow("Emotion Detection", frame)
try:
result = DeepFace.analyze(frame, actions=['emotion'], enforce_detection=False)
print("Detected:", result[0]['dominant_emotion'])
except:
pass
if cv2.waitKey(1) & 0xFF == ord('q'):
break
cap.release()
cv2.destroyAllWindows()
```

RESULTS

- Example: Happy → Detected as Happy
- Example: Sad → Detected as Sad
- Example: Angry → Detected as Angry

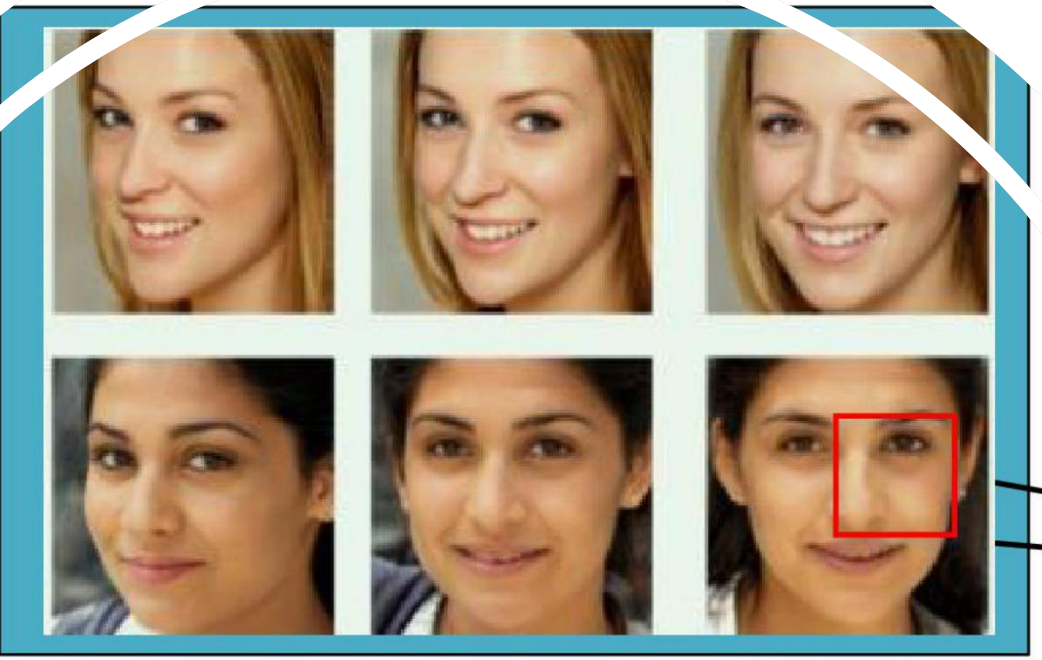


CHALLENGES

Lighting & camera quality.

Face angles.

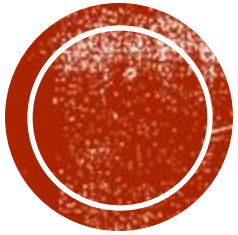
Misclassification of similar emotion



Input image

FUTURE WORK

- Train custom CNN for higher accuracy.
- Add more emotions.
- Real-time surveillance integratio



CONCLUSION

- Achieved emotion detection from images & live camera.
- Applications in education, psychology, customer service, and security.